

ABSTRACT OF THE DISCLOSURE

The primary purpose of this system is to have a refrigeration system that is super energy efficient that eliminates the dependency on the compressor. It also has a feature such as a special section of low moisture volume for ethnic foods or other perishables which are sensitive to moisture. The energy efficiency is made possible by utilizing cryogenic nitrogen gas at - 41 C in a container as the refrigerant that functions as a heat sink. Initially, the nitrogen gas is filled into this heat sink volume at a specific low temperature. Instead of being a circulated working gas refrigerant, which has to go through phase changes, the nitrogen gas always remains at the same gas state and at the same temperature. Same temperature is kept as a result of using an external air flow chilling effect, that is applied on thin rectangular prisms, by two fans that establish a fast air flow. The connection to the heat sink for the heat flow, is made by very thin copper cells that have special semi - heat conducting interfaces. These copper cells have gradually differing masses, that get larger as each one gets closer to the heat sink, and make up the internal walls of the fresh food volume. As a result, surface areas that face the volume that is to be cooled also differ in area for each cell. As a result of a combination of these different areas and interfaces between conducting cells, a certain temperature differential is kept, so that heat flow towards the heat sink is continuous and no two cells reach thermal equilibrium. Heat sink absorption is without using a compressor, therefore it is much more energy efficient. Having a system that is made independent of compression - condensation cycles, through the use of the above mentioned structural cell heat flow, is what the invention presents as what is new in the art.